Plan for Implementing the Federal IT Workforce Challenge Recommendations

**Developed by the
CIO Council Federal IT Workforce Committee**

Submitted by

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Background

In June 1999, the Federal Chief Information Officers (CIO) Council IT Workforce Committee reported that the demand for highly skilled IT workers was growing at an extraordinary pace, while employers around the country—including the federal government—struggled to meet their needs for these workers. The tight IT labor market was well documented, and was reflected in rising salaries.

This situation has not changed. In July 2000, the Information Technology Association of America (ITAA) and William M. Mercer, Incorporated unveiled a new study indicating that information technology (IT) positions are substantially harder to fill than other types of jobs. According to ITAA President Harris Miller, "the IT job shortage continues to impact virtually every sector of our economy. Organizations large and small, from diverse industries, all report difficulty recruiting and retaining qualified technology workers. In an age where intellectual capital is often a company's primary asset, it is a concern that the capital is a scarce, sometimes rare resource."

In its June 1999 report, "Meeting the Federal IT Workforce Challenge," the Federal CIO Council IT Workforce Committee presented 13 recommendations to address the complex challenges of maintaining an effective federal IT workforce, including planning, recruitment, retention, and development strategies. The Education and Training Committee (since renamed the Federal IT Workforce Committee) prepared the report.

This implementation plan describes accomplishments, as well as ongoing and planned actions, that support the report's recommendations. Some of these accomplishments and actions occurred in response to our report; others were initiated independently, yet in the spirit of the recommendations. Some of the recommendations and actions have been modified to more accurately reflect their implementation. The goal of the Federal CIO Council IT Workforce Committee is to illuminate as many agency actions as possible that promote the needs of the federal IT workplace, so that other federal agencies may become aware of them and consider them for adoption.

This plan groups the original recommendations into three categories: workforce planning and management, recruitment and retention, and career development. Recommendations have been renumbered to sequence them within these respective categories. Each recommendation includes a brief background statement and provides the status of current activities to fulfill the recommendation.

The final sections discuss recommendations that are being implemented at the agency level and those identified for future consideration.

Assumptions and Constraints

The timely and successful execution of this work plan will depend upon federal agencies accepting responsibility for implementing the recommendations. To help ensure that the recommendations are implemented, it is anticipated that an agency accepting responsibility for a recommendation will have the functional responsibility for the recommended actions as a normal part of its mission. Accordingly, agencies can satisfy their own mission goals and the CIO Council IT Workforce recommendations at the same time. Appropriate resources must be available to implement the recommendations.

Recommendation Areas

Workforce Planning and Management

1. **Occupational Structure and Pay Flexibilities**. The Office of Personnel Management (OPM), in conjunction with the CIO Council, should continue the study of IT occupational structure and pay flexibilities.

   Background: The federal government faces tremendous challenges in employing and paying its civilian IT workforce. Chief among them are disparate pay levels and an inflexible and outdated occupational structure.

   Proposed actions:

   a. Identify and implement new IT parenthetical specialty job titles

   b. Implement a new IT Job Family Classification Standard

   c. Implement a new IT Job Family Qualification Standard

   d. Identify recruitment and retention problems and establish special rates for IT workers, as appropriate

   e. Conduct a study on a variety of private sector compensation systems and provide recommendations on the tools needed to recruit and retain well-qualified IT employees.

   Current Activities:

   New Job Titles: OPM began last year to revise the classification and qualification standards for critical IT occupations. This initiative is being conducted in close collaboration with agency human resource (HR) and IT experts. On October 19, 1999, OPM issued a draft framework of new parenthetical specialty titles that provide a basis for more accurately describing federal IT work and a competency-based job profile to replace the current qualification standards for the Computer Specialist and Telecommunications series. OPM also plans to issue guidance on

competency requirements specific to each parenthetical specialty title, and develop job profiles for the Computer Engineer and Computer Scientist series at a later date.

OPM has published qualification standards for most federal occupations. These standards describe the minimum qualifications required to perform work successfully at various levels. The current standard consists of two parts. The first part, the group coverage standards, describes the minimum qualifications requirements for occupations with common patterns of education and experience. The second part, the individual qualification standards and occupational requirements, describes the minimum qualification requirements for individual occupations or positions. Standards are currently published in the Qualifications Standards Operating Manual, available at the OPM web site (www.opm.gov). As other qualification standards are revised in the competency-based format, they will also be published in the operating manual.

OPM released the new approved parenthetical specialty titles for immediate use in March 2000, at the kick-off of the pilot project. The draft job profile was made available in mid-March 2000. Twelve agencies are participating in a voluntary pilot study. Benchmark and structured interview materials have been delivered to the pilot agencies. Structured interview training for all pilot agencies has been completed (except for agency-specific sessions). A rollout of the web-based assessment tools began the week of July 10, 2000, using the new specialty titles on the USAJOBS website. Any agency can use the draft job profile, but agencies not participating in the pilot remain bound by the current qualification standard.

New Job Family Classification Series. On July 17, 2000, OPM issued a memorandum for classification chiefs, introducing a "Draft Job Family Position Classification Standard for Administrative Work in the Information Technology Group, GS-2200A," for review, test application, and comment by October 20, 2000. The draft standard is designed to cover all positions currently assigned to the Computer Specialist Series, GS-0334, as well as positions classified in other series (e.g., the Telecommunications Series, GS-0391, and the Miscellaneous Administration and Program Series, GS-0301), where IT knowledge is paramount. The standard covers positions for which IT knowledge is an integral aspect of the job's responsibilities rather than simply a tool. On July 18, 2000, OPM also issued a Memorandum for Directors of Personnel and the Federal CIO Council announcing the release of the draft for review and comment.

OPM is also conducting an IT occupational study to validate the draft IT competency profile through a government-wide survey of 22,000 IT employees and supervisors. The results of the survey will be used to refine and update the new competency-based job profile and IT classification standards. The job profile provides a basis for an integrated, competency-based approach to recruiting, selecting, and retaining a high-quality IT workforce. It offers precision in identifying the competencies required for successful job performance and is

flexible enough to support a variety of recruitment strategies, assessment methods, and career development plans.

Special Rate Study. Two current studies address federal civilian IT workforce pay. In one study, OPM is coordinating with agency directors of personnel and the Federal CIO Council to study the possibility of establishing special rate schedules for categories of IT workers to help address recruitment and retention problems. Under 5 U.S.C. 5305, OPM may establish special salary rates to address situations in which the Government's recruitment or retention efforts are, or are likely to become, significantly handicapped. On May 18, 2000, OPM sent a memorandum to agency Directors of Personnel requesting their assistance in providing some of the staffing and other data needed for the study. As of September 1, 2000, OPM has received data from about 40 agencies, which collectively employ more than 90 percent of all GS-334 employees.

IT Pay System Report. The CIO Council has determined that the National Academy of Public Administration (NAPA) can provide a valuable contribution to the public understanding of federal IT compensation issues by conducting an independent study of IT compensation strategies and by making recommendations on how the government can best compete for IT talent. NAPA will conduct a survey of private and public sector organizations of sufficient scope and breadth to determine:

- Whether private sector firms and other public sector organizations incorporate their IT compensation system as a part of their overall compensation structure, or as an exception to that structure
- How the federal IT compensation structure compares to non-federal structures in organizations of similar functions
- How salary progression rates for IT employees compare in federal and non-federal sectors
- Where the greatest compensation discrepancies exist, e.g., entry level, senior level, or particular specialties
- What compensation practices in the non-federal sector are most relevant to the problems identified by the federal CIO community
- Appropriate compensation rates for an IT occupational pay system.

2. **Continued Workforce Planning.** The CIO Council should support a continuing workforce planning capability at OPM.

Background: Accurate, specific, and timely information about the federal IT workforce is essential to understand trends and plan accordingly.

Proposed actions:

a. Establish a workforce planning capability.

Current Activities:

Planning Methodology. OPM is developing a systematic methodology for workforce planning and staff analysis, which will provide user agencies with a single, integrated interface to a vast array of tools to facilitate their workforce planning. These tools will allow agencies to conduct data and statistical analyses to identify trends and forecast workforce needs; access diversity, education, pay and benefits information; review strategies for succession planning; and link to a library of resources, best practices, literature, and web sites on strategic planning, and recruitment and retention information. OPM has identified sets of data sources (e.g., Civilian Personnel Data File, Educational Pipeline for Post Secondary Educational Institutions, Census, etc.) to be incorporated in a full-scale version of this automated tool. Results of this initiative will support effective succession planning in agencies and enable them to recruit a diverse pool of applicants for mission-critical occupations.

OPM is currently developing a prototype workforce planning and analysis model and accompanying automated system. Selected agencies and stakeholders will test the prototype and accompanying automated system and provide feedback to OPM on the tool's effectiveness and any requirements that need to be added or refined for the development of the comprehensive beta model planned for completion in early FY-2002. The fully operational model and system will be available government-wide by the end of FY-2002.

Table 1 identifies the current and planned tasks and milestones for actions necessary to implement the recommendations in the June 1999 report.

Table 1. Actions and Plans for Workforce Planning and Management

1. Occupational Structure and Pay Flexibilities	
a. New IT Parenthetical Specialty Job Titles	
Action: Identify and implement new IT parenthetical specialty job titles	
Responsible Agency: OPM *Contact:* Judith A. Davis, Chief, Classification Programs Division, 202-606-2950	
Tasks:	*Milestones:*
Conduct extensive literature review	Completed
Develop IT job titling model	Completed
Conduct focus groups with federal, academic, and private sector representatives to review job titling model	Completed
Distribute draft parenthetical specialty titles for 30-day review	Completed
Issue new parenthetical specialty titles for optional use	Completed

Begin pilot of new titles with competency-based job profile	Spring 2000
Issue final titles with new IT job family classification standard	Winter 2000/2001

b. Classification Standard

Action: Develop and implement a new IT job family classification standard	
Responsible Agency: OPM *Contact:* Judith A. Davis, Chief, Classification Programs Division, 202-606-2950	

Tasks:	*Milestones;*
Study IT occupations	Completed
Distribute draft IT job family classification standard for 90-day review	July 17, 2000
Publish new IT job family classification standard	Winter 2000/2001

c. Qualification Standard

Action: Develop and implement a new IT job family qualification standard	
Responsible Agency: OPM *Contact:* Donna Gregory, 202-606-0940	

Tasks:	*Milestones:*
Study IT occupations	Completed
Distribute draft competency-based job profile for GS-334 and GS-391 series for 30-day review	Completed
Develop competency guidance for Information Security Specialty	Completed
Begin pilot of competency-based job profile	Spring 2000
Distribute government-wide IT survey	Fall 2000
Issue new competency-based job profile	Spring 2001

d. Special Rate Studies

Action: Identify recruitment and retention problems and establish special rates for IT workers, as appropriate	
Responsible Agency: OPM	
Contact: Donald Winstead, 202-606-2858	

Tasks:	*Milestones:*
Memo to agency Director of Personnel requesting assistance	Completed
Submission of agency recruitment and retention information	Completed
Implementation of new special rates	January 1, 2001

Action: Conduct a study on a variety of private sector compensation systems and provide recommendations on the tools needed to recruit and retain well-qualified IT employees	
Responsible Agency: CIO Council IT Workforce Committee **_Contact:_** Fred Thompson, 202-622-1557	
Tasks:	**_Milestones:_**
Award contract	September 30, 2000
Conduct research/ briefing on findings	February 18, 2001
Draft report distributed for review and comment	April 19, 2001
Final Report	June 9, 2001
Publish and post to web site	June 19, 2001

2. Workforce Planning	
Action: Establish workforce planning capability	
Responsible Agency: OPM **_Contact:_** Mary Ellen Beach, 202-606-1040	
Tasks:	**_Milestones:_**
Develop systematic methodology for workforce planning and staff analysis	Completed
Identify automated tools and data sources	Completed
Complete development of an operational prototype workforce planning and analysis model and accompanying automated system	April 30, 2000
Begin prototype testing with selected agencies and stakeholders	April 30, 2000
Complete evaluation of prototype model and system	September 30, 2000
Complete technical requirements and specifications for "beta" version of model and system	September 30, 2000
Complete SOW for design and development of "beta" version	December 31, 2000
Award contract	March 31, 2001
Begin development of "beta" version and collect feedback from test agencies	June 30, 2001
Complete work on "beta" version of the workforce planning model and accompanying automated system	October 30, 2001
Provide model and system for government-wide use; initiate plans for continuing system maintenance and technical assistance	September 30, 2002
Measurement of results	June 30, 2003

Recruitment and Retention

1. **Hiring Flexibilities.** The CIO Council should support OPM's effort to encourage the use of existing hiring flexibilities.

   Background: Recruiting has emerged as one of the most pressing IT challenges. Use of hiring flexibilities and a direct hire authority is needed to compete with the private sector.

   Proposed actions:

   a. Encourage use of hiring flexibilities.

   Current Activities:

   Existing Flexibilities. In March 1998, OPM made information available at its web site to assist agencies in their efforts to recruit and retain IT professionals for Y2K. The guidance, "Recruiting and Retaining Information Technology Professionals" provides information on the existing hiring flexibilities available to federal agencies. The information can be found at the OPM web site under Y2K.

   During the summer of 1999, the GSA published a summary of this guidance in a quick-reference pamphlet entitled, "Hiring Toolkit for IT Jobs in the Federal Government/Techniques You Can Use NOW." The pamphlet was made available to attendees at the Interagency Resources Management Conference (IRMCO) in September 1999. Currently, some 5,000 pamphlets are still available for distribution to federal agencies.

   In December 1999, OPM reported on a special study entitled "The 3Rs: Lessons Learned from Recruitment, Relocation, and Retention Incentives." The study examined the use of recruitment and relocation bonuses and retention allowances in the federal government. Two of the reports key findings relate to technology positions: (1) the use of the 3Rs has been slow, but is increasing; and (2) employees in highly skilled professional and technology occupations have received the largest number of 3Rs payments, with GS-334-computer specialists receiving the largest share (39 percent).

   In November 1999, OPM's Employment Service published a bulletin, Employment Solutions, Vol. 1, No.1. This bulletin, among other things, provides recruitment tips and identifies hiring flexibilities.   In June 2000, OPM published a second bulletin, Employment Solutions, Vol. 2, No. 1. The emphasis of this bulletin is on how to build a high performance organization. The bulletin covers topics such as effective workforce planning, identification of critical competencies, valid/innovative assessments, efficient recruitment, appropriate retention, and more.

2. **Nontraditional Workforce.** OPM should encourage federal agencies to recruit from nontraditional labor pools.

    Background: Nontraditional labor pools include unemployed and underemployed mid-career technical professionals; military technical professionals; women, minorities, and persons with disabilities, and part-time workers.

    Proposed actions:

    a. Develop program to recruit women, minorities, and people with disabilities
    b. Develop bridge program for military technical professionals
    c. Develop outreach program.

    Current Activities:

    OPM recognizes that the federal government must strive to create and maintain a sound, diverse, and cooperative work environment. To that end, the OPM identifies guidance in this area at its web site, through a seminar, and in three publications. The seminar is entitled, "Diversity: A Business Necessity for the Millennium," and the three publications are: "Assessing Opportunity: The Plan for Employment of People with Disabilities in the Federal Government," "People with Disabilities in the Federal Government: An Employment Guide," and "Building and Maintaining a Diverse and High Quality Workforce." While each of these applies to more than just technology positions, and addresses women, minorities, and people with disabilities, they offer valuable guidance.

    On July 26, 2000, President Clinton announced that the federal government will be able to hire 100,000 people with disabilities and charged the OPM with oversight of the initiative. Under the Executive Order 13163, each agency and department will submit to OPM for approval a blueprint detailing a comprehensive strategy for recruiting and hiring people with disabilities. The blueprints are due to OPM by September 25, 2000.

    Programs to bring military technical professionals and unemployed and underemployed mid-career technical professions to the civilian workforce are included under the recommendations for future consideration.

3. **Student Outreach.** The Department of Commerce, the CIO Council, and OPM should jointly conduct an information/outreach campaign to encourage students to pursue IT careers in government.

    Background: The federal government should act now to interest more students in computer professions early in their educational careers.

Proposed actions:

Establish a Federal Cyber Service (Critical Infrastructure Assurance Office (CIAO)/OPM)

Current Activities:

The National Coordinator for Security, Infrastructure Protection, and Counter-Terrorism, at the direction of the President in Presidential Decision Directive 63 (PDD-63), has developed a National Plan for Information Systems Protection Version 1.0, *An Invitation to a Dialogue* (January 2000). The National Coordinator states that "the [National] Plan will build a defense of our cyberspace relying on new security standards, multi-layered defensive technologies, new research, and trained people. Of all of these, the most urgently needed, the hardest to acquire, and *sine qua non* for all else that we will do, is a cadre of trained computer science/information technology specialists….The Plan proposes steps to stimulate the higher education market to produce what America urgently needs in this area." One of the programs in the plan, "Train and Employ Adequate Numbers of Information Security Specialists," includes a Federal Cyber Service (FCS) training and education initiative, which calls, among other things, for the development of a Center for Information Technology Excellence (CITE), the creation of a Scholarship for Service (SFS) program, and the development of a high school recruitment and training initiative.

The CITE will establish a nation-wide network of centers that will provide standardized training in OPM's required federal IT employee technical competencies. Among other things, the CITE will provide high-caliber, cutting-edge information security training to college and high school students in the FCS career education program. Initially, development of the CITE will focus on providing training for system administrators and information system security officers. Future expansion of the centers will focus the training of system certifiers, risk managers, computer scientists, computer engineers, computer programmers, and system analysts. The proposed high school recruitment and training initiative will identify promising high school students for participation in summer work and internship programs that would lead to possible future employment. The summer camps could be integrated with federal training programs to allow attendees to heighten their exposure to government work and standards, and increase their value to a federal agency as a potential employee.

The SFS will fund up to 300 students per year (100 students in the initial year) in their pursuit of graduate or undergraduate degrees in the IT security field. In return, the student will serve in the federal IT workforce for a fixed period following graduation.

The National Plan and the fiscal 2001 budget proposed more than $90 million for several cyber security initiatives, including the FCS training and recruitment program; however, funds were not included for the high school initiative. While

final funding authorization is not yet complete, there has been positive progress. Senators Fred Thompson (R-TN.) and Joseph Lieberman (D-CT.) have introduced a bill that includes authorization for the FCS program. The Government Information Security Act (S. 1993) would require agencies to create a formal process to secure information systems.

To speed up the authorization process, Senators Thompson and Lieberman attached their bill to the fiscal 2001 defense authorization bill (HR. 4205), which passed the Senate the week of July 17. If enacted as part of the authorization bill, the bill will include funding for the initial phases of the FCS program.

In another initiative, the Department of Commerce has worked with leaders from industry, education, and employee groups for more than two years exploring the challenges of developing a competitive IT workforce in the United States. Increasingly, these jobs require higher levels of technical skills and increased levels of proficiency in math and science. Unfortunately, many students lack an understanding of the variety of technological career opportunities that exist. As a result, many students perceive that technology jobs "are just for geeks." At a series of Commerce Department town meetings, the most common suggestion for addressing this image problem was to create a national media campaign to promote a positive image of technical jobs. The Commerce Department is partnering in a national media campaign for America's youth in which Women in Film—a Hollywood-based nonprofit organization—is creating public service announcements encouraging students to study math and science to prepare for technical careers. The National Association of Manufacturers, the largest industrial trade association in the United States, is developing campaign support elements such as a 1-800 number, a technical careers web site, and posters. The GET TECH campaign will be launched on October 2, 2000 in connection with the second annual National Techies Day, which will be observed with national and local events held around the country on October 3. Last year, more than 4000 organizations across the country participated in the inaugural Techies Day, established to acknowledge and celebrate the contributions technology professionals have made to our world.

While not specific to IT, another outreach example, at the Department of Commerce, introduces children to the federal work place, where the use of information technology is prevalent. In April 1998, more than 300 children participating in "Take Your Child to Work Day" at the Department did more than job shadow their parents; they participated in events designed to capture their imagination while stressing the importance of math and science education. Guest speakers from the National Oceanic and Atmospheric Administration included a "Hurricane Hunter" pilot, a meteorologist, and ship captains. A Detroit auto executive discussed present and future cars; a scientist from the National Institute for Standards and Technology took part; and a representative from the Patent and Trademark Office used Beanie Babies and crayons to discuss patents and trademarks.

4. **IT Career Academy.** The CIO Council, in partnership with key federal agencies and the private sector, should develop an IT career academy and curriculum for adoption by high schools nationwide.

Background: Career academies are an important source of talent for several professions and should also be established for Information Technology.

Proposed actions:

a. Develop an IT career academy and curriculum for adoption by high schools nationwide

b. Establish a Federal Cyber Service (CIAO/OPM).

Current Activities:

On July 6,1999, President Clinton and Sanford I. Weill, Chairman of Citigroup and the National Academy Foundation (NAF), announced that the NAF would launch a new Academy of Information Technology (AoIT). The new program will prepare high school students for careers in dynamic IT fields. The program will provide a ninth through twelfth grade curriculum, with opportunities to partner with community colleges, universities, and businesses. The AoIT is supported by a roster of blue-chip corporations led by Lucent Technologies; other partners include Computer Associates, United Technologies Corporation, and AT&T.

The U.S. Commerce Department, the Small Business Administration, and the U.S. Department of the Treasury will support the NAF in developing the program and supporting specific local academies. The Federal CIO Council is actively participating with the Center for Occupational Research and Development (CORD), a national education reform leader, in the development of the curriculum for the new academy. The Federal CIO Council IT Workforce Committee arranged to have CORD representatives visit the National Weather Service, NASA's Johnson Space Center in Houston, and the Bureau of Engraving and Printing to research the skills, knowledge, and attitudes required of entry-level workers.

The Federal CIO Council IT Workforce Committee has worked closely with the NAF to establish a meaningful curriculum for its new AoIT. A committee including the U.S. Departments of Agriculture, Commerce, and the Treasury provided broad guidance on worker skill needs. On July 13, 2000, the NASA Johnson Space Center CIO and Treasury Department's Program Manager for IT Workforce Improvement met with NAF officials and representatives of Oracle, United Technologies, Lucent Technologies and the Information Technology Association of America as part of an Employer Curriculum Panel. This panel will provide ongoing review of the AoIT curriculum.

Twelve pilot sites have been chosen for implementation in Fall 2000, to reach a total of 350 to 400 students. One year later, 40 new schools will be added—the number of academies will then increase at a rate of 40 to 50 per year, depending on full industry support. This expanding network of rigorous academies will prepare our information technology workforce for the next century.

The pilot sites were chosen for demonstrating leadership and flexibility; a commitment to career education; an ability to secure mentors, internships, and teacher training from local business partners; and a baseline of technological capabilities that will be enhanced through NAF program grants. They are: Gorton High School in Yonkers, New York; Washington High School in Milwaukee, Wisconsin; Eleanor Roosevelt High School in Prince George's County, Maryland; Lake Clifton-Eastern High School in Baltimore, Maryland; A.J. Moore Academy in Waco, Texas; Oak Grove High School in San Jose, California; Hilltop High School in Chula Vista, California; Plantation High School in Broward County, Florida; Taconic High School in Pittsfield, Massachusetts; South High School in Omaha, Nebraska; L.E. Dieruff High School in Allentown, Pennsylvania; and Sea-Tac OSC/Tyee High School in the Highline School District near Seattle, Washington. Teachers began training on the curriculum in April, and met to discuss strategies for the program. The AoIT programs will be operational in schools in September 2000.

In New York City, the National Academy Foundation is collaborating with the Board of Education to design an entire high school of information technology based on the NAF AoIT model. The new High School of Information Technology will be built in the borough of Queens and is slated to open in 2003.

With regard to the FCS initiative, OPM will be designing and developing a high school recruitment and training initiative targeting promising high school students for participation in summer work and internship programs leading to possible future employment. The effort will also examine possible programs to promote computer security awareness in secondary and high school classrooms. It may make sense to link this effort with other outreach activities such as the National Educational Technology Standards program and the NAF IT academies initiative.

5. Scholarship or internship program. A scholarship or internship program should be established for promising IT students in exchange for government service

Background: The federal government will need a substantial number of IT workers in the coming years: scholarship and intern programs should be utilized to help overcome the projected shortage.

Proposed actions:

a. Federal Cyber Service (CIAO/OPM).

Current Activities:

As indicated earlier, the National Plan for Information Systems Protection, under its "Train and Employ Adequate Numbers of Information Security Specialists" program, provides for an FCS training and education initiative. One of the programs of the FCS is the creation of a Scholarship for Service (SFS) program. The SFS program directly supports this recommendation.

The SFS will fund up to 300 students per year (100 students in the initial year) in their pursuit of graduate or undergraduate degrees in the IT security field. In return, the student will serve in the federal IT workforce for a fixed period following graduation. The program will also have a meaningful summer work and internship element. The SFS program will identify universities for participation in the program and assist in the development of information security faculty and laboratories at these universities. It makes sense for the broader SFS program to take advantage of the program initiated by the FCS. Accordingly, the tasks for the FCS SFS program will be used as the tasks for the broader IT SFS program. The broader IT SFS program could get under way by the fall 2001.

On July 10, 2000, OPM unveiled the "Federal Career Intern Program." The program, established by presidential Executive Order 13162, offers participants professional experiences and training opportunities tailored to meet their professional goals.

Individuals hired into the program will occupy positions that are classified as professional, administrative, or technical in nature. Interns will receive excepted-service appointments for up to two years at grades GS-5 through GS-9. With OPM's approval, appointments may be extended for up to one additional year. Guidance on the program is expected from OPM in fall 2000.

Table 2 identifies the current and planned tasks and milestones for actions necessary to implement the recommendations in the June 1999 report.

Table 2: Actions and Plans for Recruitment and Retention

1. Hiring Flexibilities	
Action: Encourage the use of existing hiring flexibilities	
Responsible Agency: OPM *Contact:* Suzy Barker, 202-606-2226	
Tasks:	*Milestones:*
Distribute the OPM Employment Solutions Bulletin	November 1999, June 2000
Periodic distribution of the OPM Employment Solutions Bulletin	Fall 2000
Measurement of results	Spring 2001
2. Nontraditional Labor Pools	

Action: Develop program to recruit women, minorities, and people with disabilities	
Responsible Agency: OPM Contact: Mercedes Olivieri, 202-606-2605	
Tasks:	Milestones:
Reports and Guidance from OPM on a Diverse Workforce including "Building and Maintaining a Diverse, High Quality Workforce"	Summer 2000
Develop additional guidance for specific groups	Spring 2001
Measurement of results	Spring 2002

3. Student Outreach

Action: OPM and Commerce Department jointly conduct an information/outreach campaign to encourage students to pursue IT careers	
Responsible Agency: Commerce, Education, OPM, CIAO Contact: Shirley Malia, 202-482-7469	
Tasks:	Milestone:
Form CIAO	June 1998
Conduct Baseline Assessment of Current Activities	December 2001
Design and implement the high school and secondary school outreach programs to include conferences, summer work, and internships	Spring 2002
Offer technical training programs to SFS and high school program students on their summer work programs	Summer 2002
Measurement of Results	Winter 2003

4. IT Career Academy

Action: Develop an IT career academy and curriculum for adoption by high schools nationwide	
Responsible Agency: Commerce, Treasury, CIAO, Small Business Administration Contact: Marc Cummings (Commerce), 202-482-8323; John Ferrandino (NAF), 212-635-2400	
Tasks:	Milestones:
Form interagency team (Commerce, Treasury)	Completed
Conduct assessment of NAF/CORD activities	Completed
Site visits for CORD to federal agencies	Completed
Pilot 12 academies with NAF	September 2000
High School of Information Technology (New York)	Open in 2003
Measurement of results	Summer 2004

5. Scholarship and Internship Program

Action: Establish a scholarship and internship program	
Responsible Agency: NSF, OPM, CIAO Contact: Shirley Malia, 202-482-7469	

Tasks:	Milestones:
Form CIAO	June 1998
Begin university outreach effort to promote SFS program	Fall 2000
Establish standards, accreditation requirements, and guidelines for a university to apply for and be selected to participate in the SFS program	Fall/Winter 2001
Designate the universities selected to participate in the first year of the SFS program	Winter/Spring 2001
Conduct a pilot information systems training program for prospective SFS faculty. This will be the precursor to a faculty development program	Summer 2001
Recruit up to 100 SFS graduate and undergraduate college students for the first year beginning October 2001, and 300 students for each subsequent year	Spring/Summer 2001
Enroll the first SFS program students	October 2001
First graduates of the SFS program enter the federal IT workforce	May 2003
Measurement of results	November 2003

Career Development

1. **Upgrade Skills.** The CIO Council in conjunction with other federal agencies should support the implementation of Executive Order 13111 to upgrade the IT skills of the current workforce.

   Background: This can be accomplished through support of the Executive Order, identification of best practices for a basic level of computer competency, and elimination of restrictions on paying for degrees or certification.

   Proposed actions:

   a. Integrate IT competencies (e.g., telecommunications, architecture, systems integration, programming languages, database administration, etc.) within the framework of the Department of Labor's Federal Learning Exchange (FLX)

   b. Review and revise CIO Core Competencies on a biennial basis

   c. Identify best practices to ensure a basic level of computer competence for all government employees

   d. Eliminate restrictions on agencies paying for degrees or certifications.

Current Activities:

The Presidential Task Force on Federal Training Technology (FTT) was established by Executive Order 13111, signed on January 12, 1999. The executive order codifies a coordinated federal effort to employ technology to provide more flexible, accessible, and cost-effective training opportunities to federal employees. It also establishes a review process for exploring how federal training programs, initiatives, and policies can better support lifelong learning for all Americans through the use of learning technology.

One of the outgrowths of this effort is the Federal Learning eXchange (FLX). FLX is a one-stop electronic information center (www.flx.gov) for departments, agencies, and federal employees interested in education, training, and developing skills to succeed in the changing workplace. FLX is a central component of the coordinated Federal effort to provide flexible training opportunities to employees and to support lifelong learning through the use of learning technology. On June 1, 2000, the White House announced that the FLX, a yellow page listing of training opportunities for the federal government, is operational.

The Clinger-Cohen Core Competencies were initially endorsed by the Federal CIO Council in September 1998 to serve as a baseline to assist government agencies in complying with Section 5125(C)(3) of the Clinger-Cohen Act. They are available at the CIO Council web site, www.cio.gov, and in brochure form from the IT Workforce Committee. The competencies are being updated on a biennial basis. Publication of the updated competencies is expected in the fall of 2000.

OPM Director Janice Lachance recently gave congressional testimony on a possible CIO executive exchange program. The goal is to establish an executive order, to be signed under the current administration by the end of the calendar year, authorizing agencies to exchange the best and brightest IT executives for developmental assignments. The target audience is current and future IT executives at the Senior Executive Service (SES)/GS-15 levels. The draft executive order is now being coordinated with OMB and the Office of Government Ethics.

To implement the recommendation to ensure a basic level of computer competency for all government employees, and to begin to develop "road maps" for meeting core competency training needs, the CIO Council, in conjunction with the Department of Education, contracted with a software vendor to produce a pilot system for assessing basic computer competencies using Internet technologies. The pilot was conducted earlier this year. The Department of Education defined 18 core competencies needed to be proficient with a typical government computer. The pilot project established the framework for seven of these competencies and ensured that the application met the standards for the disabled for government Internet applications.

The users who tested the system were very impressed with the functions; however, the system required a level of administrative maintenance that was unsuitable for meeting the day-to-day on-line training demands in the federal workplace. In addition, the costs to purchase and administer the system were too high.

Since the start of the pilot, the IT Workforce Committee has learned that various software vendors now produce systems for assessing basic computer competencies using Internet technologies, and certain agencies have similar systems in operation. Also, the committee now desires to expand the "road map" effort beyond ensuring a basic level of computer competency. Accordingly, instead of continuing with the pilot, the committee plans to focus on identifying the best existing systems and practices in the government that will result in effective methods for federal workers to attain proficiency in one or more of the CIO core competencies.

The committee's "road maps" team is seeking information about which agencies have developed sound business practices that address the CIO core competencies and learning objectives. It is also devoting its attention to identifying commercially available technical solutions for providing access to on-line learning resources. With this information in hand, the team will produce an initial draft of the road map components.

The Department of State is taking steps to retain employees with critical IT skills, and increase the expertise and stability of its IT workforce. It has established a program that offers financial recognition for completing formal certifications such as GSA's 1000 x 2000 Information Resources Management program, and Microsoft's Certified Systems Engineer program.

Another FCS program that is in direct support of this recommendation is the development of a Center for Information Technology Excellence (CITE). The center will identify training providers for agencies to use to train current Federal IT personnel and help maintain their skill levels throughout their careers. The Center will leverage the significant progress made by the Department of Defense and other federal agencies on this issue. As a complete review of Federal-wide information systems security training and education programs is conducted to identify existing programs and any gaps or redundancies, a broader look at IT training could also be done. Accordingly, the CITE could be expanded in the future to include more than information systems security training.

The STAR program is a graduate level program designed under the auspices of the General Services Administration (GSA) and the CIO Council's Federal IT Workforce Committee. The program graduated classes in December 1999 and May 2000. STAR is a resident seminar program of two 1-week sessions (separated by two or three weeks) focused on program and project management (4 days), leadership (2 and 1/2 days), security (1 day), technology (1 day), and government (1 day). It focuses on tomorrow's government workplace—the highly

strategic environment in which operational functions are outsourced and agency business objectives and outcomes are key. STAR emphasizes Clinger-Cohen results-based management as well as "information technology as a strategic resource." STAR is designed to create an optimal learning environment for the professionals who attend the seminar. It follows the adult learning model with a strong emphasis on experiential learning and each participant's personal and organizational goals.

STAR includes a practicum designed to integrate the various aspects of the learning from each module into an immediate return to the participant, the sponsoring agency, and the sponsoring executive.

In action to allow agencies to pay for college degrees, OPM proposed in the June 22, 2000 *Federal Register* to implement provisions authorizing federal agencies to repay federally insured student loans when necessary to recruit or retain highly qualified professional, technical, or administrative personnel. Once the regulations are adopted, OPM will provide guidance to agencies. The guidance is expected to be available in fall 2000.

2. **CIO University**. The CIO Council should continue to support the establishment of a virtual CIO University

Background: A virtual CIO University is needed to provide comprehensive training for federal and industry IT leaders.

Proposed actions:

a. Establish a CIO University.

Current Activities:

The Federal CIO Council helped establish the CIO University, a virtual consortium of universities that offers graduate level programs to directly address executive core competencies, improving government by enhancing the skills of its top executives. The four universities currently participating are Carnegie Mellon University, George Mason University, George Washington University, and the University of Maryland University College. The CIO University, sponsored by the Federal CIO Council and administered by GSA, is open to SES-level individuals, GS-15s, GS-14s, and comparably ranked military and industry officials. Each participant must be sponsored; the agency, business, or participant pays tuition.

The CIO University (CIOU) http://ciouniversity.cio.gov has 18 graduates to date (2 from government and 16 from industry). The inaugural graduation ceremony was held on July 12, 2000. There are currently up to 70 individuals registered in the CIOU, through both GSA and the four participating. Some of the universities have submitted proposals for distance learning.

Table 3 identifies the current and planned tasks and milestones for actions necessary to implement the recommendations in the June 1999 report.

Table 3. Actions and Plans for Career Development

1. Federal Learning Exchange	
Action: Integrate IT competencies within the framework of DOL's Federal Learning Exchange (FLX)	
Responsible Agency: DoL, 202-219-6057, ext. 172	
Tasks:	*Milestones:*
FLX Operational	June 1, 2000
Measurement of Results	June 2001
2. Core Competencies	
Action: Review and revise CIO Core Competencies on a biennial basis	
Responsible Agency: CIO Council IT Workforce Committee *Contact:* Fred Thompson, 202-622-1557	
Tasks:	*Milestones:*
Review and update the Clinger-Cohen Core Competencies with the IT Workforce Committee	Summer 2000
Obtain the endorsement of the Federal CIO Council	Fall 2000
Post to the CIO Council web site	Fall 2000
3. Basic Workforce Competencies	
Action: Identify best practices to ensure a basic level of computer competence for all government employees	
Responsible Agency: Education, Minerals Management Service	
Contact: Steve Gorey, 703-787-1258	
Tasks:	*Milestones:*
Kick-off pilot	January 2000
Mid-point review	February 2000
Complete Pilot	April 2000
Identify systems used in various agencies	Winter 2000

4. Degrees and Certifications

Action: Eliminate restrictions on agencies paying for degrees and certifications

Responsible Agency: OPM, OMB *Contact:* Suzy Barker, 202-606-2226)

Tasks:	*Milestones:*
Repayment of Student Loans: proposed rule making	June 2000
Guidance from OPM to agencies	Fall 2000
Consider the elimination of other restrictions	Spring 2000
Measurement of Results	Spring 2001

5. Center of Excellence

Action: Development of a Center for Information Technology Excellence (CITE)

Responsible Agency: OPM, CIAO *Contact:* Shirley Malia, 202-482-7469

Tasks:	*Milestones:*
Complete a review of Federal-wide information systems training and education programs to identify existing programs and any gaps or redundancies	Spring 2001
Establish the standards that institutions will have to meet to be designated as a CITE approved training provider	Summer 2001
Identify recognized high caliber information systems training providers from the public/private sector	Fall 2001

6. CIO University

Action: Establish a CIO University

Responsible Agency: GSA, CIO Council IT Workforce Committee *Contact:* Emory Miller, 202-501-4675

Tasks:	*Milestones:*
Determination of Competencies and Learning Objectives	Complete
RFI for Comment	Complete
Proposals Due	Complete
Selection of Participating Universities	Complete
Initiate and Evaluate Pilots	October 2001
Establish CIO University	December 2001
Measurement of Results	June 2002

Recommendations To Be Implemented at the Agency Level

In deciding how best to implement the recommendation from the June 1999 report, the Federal IT Workforce Committee considered whether the recommendations were government-wide in scope and would benefit from the Committee's support, or would best be implemented at the agency level. The recommendations that follow are those determined to be best implemented at the agency level.

1. **Skills Transfer.** A sample statement of work (SOW) language should be created for skills transfer from contractor to government.

    Skills transfer from private contractors to government employees can greatly improve the quality of the federal workforce. On a case-by-case basis, agencies should develop SOW language that calls for skills transfer from contractor to government.

2. **Online Recruiting and Marketing.** A government-wide indefinite delivery, indefinite quantity (IDIQ) contract should be established for online recruiting and marketing support.

    The federal government must take advantage of web advertising to compete for employees with the private sector; this can be accomplished most efficiently and effectively through establishment of a government-wide IDIQ contract for online recruiting and marketing support.

    The Internal Revenue Service is making effective use of web sites to recruit new employees. The IRS job announcements get exposure through the use of "electronic recruiters." Career Mosaic, one of the recruiter sites, is the leading employment site on the web. According to Nielson-I/PRO, an independent auditor, Career Mosaic records more than 5 million visitors per month. It averages 482,000 job searches per day and 53.6 million hits per month.

    The OPM's web site, USAJOBS (http://www.usajobs.opm.gov), is the U.S. Government's official site for jobs and employment information. The site provides information on federal government jobs, has "hot" job lists for various agencies, and offers online applications.

    The U.S. Geological Survey (USGS) has developed an automated recruiting and hiring system that streamlines the recruitment and hiring process. The Online Automated Recruitment System (OARS) was launched in February 2000. Other agencies, such the Defense and Commerce Departments, and the FAA, also have shifted their hiring process to an automated one.

    Since agencies are having success developing their own systems and can benefit from the experiences of others, the implementation of web-based recruiting appears best satisfied at the agency level.

Recommendations for Future Consideration

The Federal IT Workforce Committee determined that the recommendations below should be considered for future action. Current activities by OPM, and the recommendations made by the Congressionally Chartered 21st Century Workforce Commission, each will influence activities on these recommendations. Accordingly, the Committee will determine during the next year whether these recommendation are best implemented at the agency level, or would benefit from the Committee's support for government-wide implementation.

1. **Beyond Year 2000.** OPM should extend beyond Year 2000 a delegated waiver authority and establish a critical needs hiring authority to allow recruitment and retention of IT professionals.

   To meet the resource demands of the Year 2000 rollover preparation, OPM provided agencies with the ability to request and receive authority to waive pay and retirement reductions for personnel engaged in this work.

   As indicated earlier, OPM is coordinating with agency directors of personnel and the CIO Council to study the possibility of establishing special rate schedules for categories of IT workers to help address recruitment and retention problems. On May 18, 2000, OPM sent a memorandum to agency Directors of Personnel requesting their assistance in providing some of the staffing data and other data needed for the study. Agency responses were due on June 30, 2000. As of September 1, 2000, OPM has received data from about 40 agencies, which collectively employ more than 90 percent of all GS-334 employees. Results from this study could be used to determine whether authority to waive pay and retirement reductions for critically needed personnel should be considered at this time.

2. **Skills Alliances.** The CIO Council should encourage federal agencies to participate in regional, sector, and occupational skills alliances.

   Occupational skills alliances are increasingly being utilized to address IT workforce needs in the private sector and should also be utilized by the federal government.

   In a report prepared by the Congressionally Chartered 21ST Century Workforce Commission entitled "A Nation of Opportunity: Building America's 21st Century Workforce," The authors report that businesses, schools, post-secondary institutions, employee organizations, and local governments are learning how strategic collaboration, linked with existing program funding, infrastructure and staff, is an efficient way to achieve results in IT skills training. In the new technology jargon, the term "Coop-etition" describes how rival companies compete in some technologies while cooperating on other projects when it is to their mutual advantage. The

Commission is calling for the commitment from local leaders in which stakeholders create partnerships to get results. The federal government should take the findings of the Commission's report and consider how alliances might be utilized in the future.

3. **Nontraditional Resources.** OPM should encourage federal agencies to recruit from nontraditional labor pools.

   In the June 1999 report, the Federal IT Workforce recommended that to cope with the IT workforce shortage, the federal government must think outside the box and recruit from nontraditional labor pools. These include unemployed and underemployed mid-career technical professionals; military technical professionals; women, minorities, and persons with disabilities, and part-time workers. As seen above, actions to help manage a diverse workforce, and specific actions to employ workers with disabilities is under way. However, more specific action to recruit from other nontraditional labor pools is not as evident.

   In considering action to recruit from other nontraditional labor pools the following information is provided from the June 1999 report:

   Mid-career technology workers who may be ***unemployed or underemployed in the private sector*** are a potential source of new recruits. Many workers in this pool may feel disenfranchised in their current job or believe that their current job does not fully utilize their skills, knowledge, and experience. However, they are highly motivated and have a solid skills base which makes them ideal candidates for federal IT career opportunities.

   Military technical professionals represent another source. These workers often have high skill levels, years of practical hands-on experience, and training in current technologies. They are familiar with government policies, procedures, and work environments. They tend to like job stability and work effectively in structured environments. Even candidates who are not fully skilled in IT will most likely have used IT skills in their jobs and may easily be trained in more specific IT skills. These workers represent extraordinary investments by the federal government in terms of education and training, and taxpayers would be well served if they can be retained in federal civilian service.

   Mid-career non-IT professionals may also be good candidates for a career change. In its study, "America's New Deficit: The Shortage of Information Technology Workers," the Commerce Department reported that some companies have found the practice of retraining existing staff to be sufficient in fulfilling their IT skill requirements. It found that many employees with no prior background and skills in computing are able to learn and apply new information technologies. Other nontraditional sources include both ***retired IT***

professionals and retired non-IT professionals who may want to return to work in the field of IT.

Finally, *part-time workers* are yet another potential labor pool which could be expanded. Part-time employment is being used successfully in the private sector. It is particularly attractive to women. One company for example specializes in hiring professionals on maternity leave who work at home.

Conclusion

Through its "Federal IT Workforce Challenge" initiative, the Federal CIO Council IT Workforce Committee has been a key advocate for strategies to help develop and maintain an effective federal IT workforce. From its beginning in late 1998, the Committee's broad agenda has encompassed the full employment life cycle: workforce planning, recruitment and retention, and career development. Thanks to successful partnerships with the key agencies, organizations, and individuals identified in this report, what were only ideas and recommendations a year ago have turned into concrete actions.

The challenge is not yet met, however, and much still needs to be done. The Committee and its partners must continue to champion current actions as they approach completion, and continue to lobby for the resources required to ensure that talented and effective IT professionals are continuously recruited, developed, and retained in the federal workforce.

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